Agenda

• Caltrain System Overview
• Project Overview
• Electric Train Design
• Sunnyvale Construction Activities
• Questions
Caltrain System

- 32 Stations Gilroy to San Francisco
- 92 Weekday Trains
- At-Grade Crossings, viaducts, and bridges
- Intermodal Connections
- Bike Commuters

JPB owns right-of-way from SF to San Jose

Union Pacific owns

Distance between Blossom Hill and Gilroy not to scale
Ridership
At Capacity Today

Bi-directional commute with riders standing on trains going southbound and northbound
## Aging Fleet

### Table 1.2: Caltrain Fleet Inventory

<table>
<thead>
<tr>
<th>SERIES</th>
<th>QUANTITY</th>
<th>NUMBER OF SEATS</th>
<th>YEAR OF MANUFACTURE</th>
<th>MAKE</th>
<th>RETIRE DATE</th>
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</thead>
<tbody>
<tr>
<td><strong>Locomotives</strong></td>
<td></td>
<td></td>
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<tr>
<td>F40 PH-2</td>
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<td>na</td>
<td>1985</td>
<td>GM - EMD</td>
<td>2015</td>
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<tr>
<td>F40 PH-2C</td>
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<td>1998</td>
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<tr>
<td>MP36PH-3C</td>
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<td>na</td>
<td>2003</td>
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<td>2033</td>
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<td><strong>Passenger Cars</strong></td>
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<tr>
<td>Gallery Trailer</td>
<td>14</td>
<td>120</td>
<td>1959-2000</td>
<td>Nippon Sharyo</td>
<td>2030</td>
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<tr>
<td>Gallery Cab (Bike)</td>
<td>10</td>
<td>108</td>
<td>1985-1987</td>
<td>Nippon Sharyo</td>
<td>2015-2017</td>
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<td>Gallery Cab (Bike)</td>
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<td>78</td>
<td>1969-2000</td>
<td>Nippon Sharyo</td>
<td>2030</td>
</tr>
<tr>
<td>Gallery Cab (Bike)</td>
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<td>97</td>
<td>1985</td>
<td>Nippon Sharyo</td>
<td>2015</td>
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<tr>
<td>Bi-Level Trailer*</td>
<td>16</td>
<td>149</td>
<td>1967</td>
<td>Bombardier</td>
<td>2027</td>
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<tr>
<td>Bi-Level Trailer</td>
<td>9</td>
<td>144</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
</tr>
<tr>
<td>Bi-Level Trailer (Bike)</td>
<td>2</td>
<td>114</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
</tr>
<tr>
<td>Bi-Level Trailer (Bike)</td>
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<td>114</td>
<td>2001-2002</td>
<td>Bombardier</td>
<td>2031-2032</td>
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<tr>
<td>Bi-Level Trailer (Bike)</td>
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<td>114</td>
<td>2008</td>
<td>Bombardier</td>
<td>2038</td>
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<tr>
<td>Bi-Level Trailer (Bike)</td>
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<td>127</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
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<tr>
<td>Bi-Level Trailer</td>
<td>6</td>
<td>140</td>
<td>2008</td>
<td>Bombardier</td>
<td>2038</td>
</tr>
</tbody>
</table>

*Trailers recently acquired from Metrolink with refurbishment ongoing.

At Retirement Age: 20/29 loco; 73/134 cars
Regional Transportation Needs

- US 101 and Interstate 280 Congested
- Corridor supports growing economy
- 75% Caltrain riders commute to work
- 60% are choice riders
# Project Description

<table>
<thead>
<tr>
<th>Area</th>
<th>Project</th>
<th>Service</th>
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<tbody>
<tr>
<td>51 miles</td>
<td>Electrification:</td>
<td>Up to 79 mph</td>
</tr>
<tr>
<td>San Francisco to San Jose (Tamien Station)</td>
<td>• Overhead Contact System (OCS)</td>
<td>Service Increase</td>
</tr>
<tr>
<td></td>
<td>• Traction Power Facilities</td>
<td>• 6 trains / hour / direction</td>
</tr>
<tr>
<td></td>
<td>Electric Trains</td>
<td>• More station stops / reduced travel</td>
</tr>
<tr>
<td></td>
<td>• 75 percent of fleet</td>
<td>time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Restore Atherton &amp; Broadway service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mixed-fleet service (interim period)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue tenant service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ACE, Capital Corridor, Amtrak, Freight</td>
</tr>
</tbody>
</table>
## Service Benefits

<table>
<thead>
<tr>
<th>Metric</th>
<th>Today</th>
<th>PCEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example Baby Bullet Train</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retain 5-6 stops</td>
<td>60 minutes</td>
<td>45 minutes</td>
</tr>
<tr>
<td>Retain SF to SJ 60 minutes</td>
<td>6 stops</td>
<td>13 stops</td>
</tr>
<tr>
<td>Example Redwood City Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train stops / peak hour</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: Prototypical Train and Schedule
Key Regional Benefits (2040)

- Greenhouse gases annual: 176,000 metric tons of CO2
- Daily traffic congestion: 619,000 vehicle miles
- Engine noise: reduced

- Clean air daily: up to 97%
- Ridership daily: 111,000
- Improved frequency/ quicker trips: more service

Note: 2013 BAC Report, generates $2.5B economic activity and 9,600 jobs
Schedule

MILESTONES

- 1999
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022

- Caltrain strategic plan makes electrification a priority
- Environmental Clearance
- Award Contract
- Groundbreaking
- First Electric Train Arrives
- Passenger Service with Electric Trains

Electrification Infrastructure Construction
Final System Testing
Additional Capacity Improvements

*Please keep in mind that testing and construction will overlap as each Segment will be tested individually, prior to final system testing.

Note: Schedule Subject to Change
Electric Train

• 2016 Capacity Board Decision (bike to seat ratio, onboard bathrooms, upper doors ‘not precluded’)

• 2017 Design Progressing w/ Additional Public Input
  - Completed: Exterior design, Seat colors, Bike Storage, ADA restroom

• 2019 Virtual Reality 360 Tour
51 Miles Corridor
4 Work Segments
3,000 Poles
10 Traction Power Facilities
Sunnyvale – Work Segment 3

Sunnyvale Work Area 4 miles
# Field Work Status

| Pre-Construction Work Completed | • Utility Survey  
|                               | • Geotechnical Investigations  
|                               | • Disposal of Soil from Geotechnical Investigations  
|                               | • Soil Resistivity Testing  
|                               | • Site Surveys  
|                               | • Signal Cable Inspections  
| Pre-Construction Work In Progress | • Foundation Potholing  
|                               | • Tree Pruning and Removal  
| Future Work                  | • Foundation Installation  
|                               | • Overhead Contact System Pole Installation  
|                               | • Overhead Contact System Wire Installation  
|                               | • Paralleling Station  |
**Future Construction Activities**

**Sunnyvale**

<table>
<thead>
<tr>
<th>Date</th>
<th>Work Activity</th>
<th>Expected Duration*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer/Fall 2018</td>
<td>Potholing</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Fall 2018</td>
<td>Tree Pruning/Removal</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Early 2019</td>
<td>Paralleling Station Construction</td>
<td>4-6 months</td>
</tr>
<tr>
<td>Summer/Fall 2019</td>
<td>Pole/Wire Installation</td>
<td>4-5 months</td>
</tr>
<tr>
<td>Summer/Fall 2019</td>
<td>Foundation Installation</td>
<td>2-4 months</td>
</tr>
</tbody>
</table>

*Expected duration indicates first and last day of activity. Number of actual work days will be fewer.
Potholing

Approx. 325 Potholes Sunnyvale
Tree Pruning and Replacement

Vegetation cleared for Electrical Safety Zone

Cross Section View

Electrical Safety Zone

Vegetation Clearance Zone:
No vegetation overhang beyond trim lines or within 10 feet of electrical components.

Note: tree pruning will be done in compliance with ANSI Z133 standards and best practices, therefore limb cuts will be made beyond the vegetation trim line, as determined by the project Certified Arborist.

Overhead Contact System' New Electrification Infrastructure

Note: This figure depicts worst case scenario vegetation clearance with side poles

Limb cuts

Vegetation Trim Line

NOT TO SCALE
City of Sunnyvale: Tree Pruning and Replacement Plan

<table>
<thead>
<tr>
<th>City of Sunnyvale</th>
<th>Caltrain Right of Way</th>
<th>Public Property</th>
<th>Private Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees Removed</td>
<td>85</td>
<td>1</td>
<td>45</td>
</tr>
<tr>
<td>Trees Pruned &gt;25%</td>
<td>133</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>Trees Pruned &lt;25%</td>
<td>148</td>
<td>5</td>
<td>101</td>
</tr>
</tbody>
</table>

304 Trees will be replaced per the Sunnyvale Tree Replacement Plan

Note: Information may change as the design progresses
Foundation Construction

• Excavation
• Rebar and Anchor Installation
• Electrical Grounding
• Concrete Fill
Pole Installation

• 3,000 Installed throughout Corridor
  • Approx. 250 Poles in Sunnyvale

• Pole Height: 30-45.5’

• Pole Spacing: ~180’ apart
Example Pole Types

- Single Track Cantilever
- Two Track Cantilever
- Portals
Pole Installation

Current Pole Installation
Stringing Wire

On-track Equipment
Traction Power Facilities

• 10 Traction Power Facilities Installed throughout Corridor

• Facility Components
  – Transformer
  – Gantries (up to 50’)
  – Control House

• Provides electrical power to trains through the Overhead Contact System

• Unmanned secure station
Paralleling Station 6

• Located at the Sunnyvale Caltrain Station Parking Lot
  – Coordination with City on location during EIR
  – Approx. 21 parking spots permanently taken

• Vegetation Screening will be implemented with review and input from City Staff

• Additional parking spaces needed during construction

• Majority of work done during the day
Paralleling Station 6
Location

Layout subject to change as design progresses
Example Paralleling Station

Example from Amtrak Northeast Corridor
Overall Construction Information

• Work will occur during day and night
• Some 24 hour weekend work
• Crews will utilize acoustical barrier blankets and position lights away from homes
• Dedicated hotline for construction complaints
SF Weekend Caltrain Closures

• Weekends - Oct 6, 2018 to Late Spring 2019
  – Caltrain service north of the Bayshore Station will be suspended on the weekends
  – Bus service will be provided from Bayshore to 4th and King and 22nd Street stations

• Weekday service will remain unchanged

• Caltrain service south of Bayshore will remain unchanged

• Bus schedule available at caltrain.com
Public Outreach

• Subscribe to Weekly Updates
  – Visit www.calmod.org/get-involved

• Additional Community Meetings
  – Pole and Wire Installation
  – Paralleling Station Construction

• Social Media

• Construction Outreach Office
Public Outreach

Physical Notices
CALMOD CONTACT INFORMATION

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